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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,014	07/29/2003	Guy M. Cohen	YOR920000173US2	7623

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FREDERICK W. GIBB, III  
MCGINN & GIBB, PLLC  
2568-A RIVA ROAD  
SUITE 304  
ANNAPOLIS, MD 21401

EXAMINER
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GEBREMARIAM, SAMUEL A

ART UNIT	PAPER NUMBER
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2811

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/629,014	Applicant(s) COHEN ET AL.	
	Examiner Samuel A Gebremariam	Art Unit 2811	

-- Th MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All   b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)                      4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)                      5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_                      6) ☐ Other: \_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

1. Applicant's cancellation of claims 8-23 without traverse of Paper No. 8 is acknowledged.

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-2 and 4-7 are rejected under 35 U.S.C. 102(b) as anticipated by Lee et al. (Super Self-aligned Double-Gate (SSDG) MOSFETS Utilizing Oxidation Rate Difference and Selective Epitaxy, IEEE, 1999, pp71-74).

Regarding claim 1, Lee teaches (fig. 1) an integrated circuit comprising: a first gate (top gate); a second gate (bottom gate); and source and drain regions adjacent and self-aligned to the first and second gate, wherein the first gate and the source and drain regions are silicided (fig. 1e) (pages 71-72).

The limitation that the first gate and the source and drain are silicided in a single self-aligned process is not given patentable weight, because it is considered to be a product-by-process claim. "[E]ven though product-by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art,

the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claim 2, Lee teaches the entire claimed structure of claim 1 above including a channel region between the first gate and the second gate (fig. 1c, page 71 1<sup>st</sup> paragraph).

Regarding claim 4, Lee teaches the entire claimed structure of claim 1 above including an insulator above the first gate (fig. 1d).

Regarding claim 5, Lee teaches the entire claimed structure of claim 1 above including insulators between the channel region and the first gate and the second gate (fig. 1d).

Regarding claim 6, Lee teaches the entire claimed structure of claim 1 above including channel extensions extending into the source and drain regions (fig. 1e).

Regarding claim 7, Lee teaches the entire claimed structure of claim 1 above including that the channel extensions have an arrow shape in cross-section.

Lee’s double gate structure in cross section (figs. 1e-f) appears to have a channel extension that looks like an arrow. Therefore Lee inherently teaches an arrow shaped channel extension.

### ***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lee in view of Vu et al. U.S. patent No. 5,702,963.

Lee teaches substantially the entire claimed structure of claim 1 above except explicitly stating conductors that electrically connecting the first and the second gate.

It is conventional and also taught by Vu (fig. 15g) electrically connecting the top and bottom gate in the structure of a double gate MOSFET structure.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to electrically connect the top and bottom gate electrodes of Lee's structure as taught by Vu in order to double the drive current of the MOSFET device.


#### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Samuel A Gebremariam whose telephone number is (703) 305-1913. The examiner can normally be reached on 8:00am-4: 30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 305-1690. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

SAG  
November 30, 2003



EDDIE LEE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2800